Leslie Heppler - Fwd: Fw: Calculations

From:	Leslie Heppler
To:	Paul Baker
Date:	12/2/2010 7:07 AM
Subject:	Fwd: Fw: Calculations
Attachments:	Partical Velocity.xls

FYI -

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>>> John Hall <johnhall10@yahoo.com> 12/1/2010 8:13 PM >>>

Leslie and Paul,

Thanks for taking the time to meet with us at the city. We appreciate you presence.

I put together the attached worksheet and found an equation that predicts Peak Particle Velocity (Explosive and Blasting Technique By Rodger Holmberg Pg 72) on a structure if you know the Peak Particle Velocity at the ground near the structure. I input the data provided by Lakeview during our meeting. The results are quite alarming. I plotted for a range of ground particle velocities and you can see how the peak structure response increases much quicker than the peak ground response. It is interesting to input different distances, explosive weights and heights on structure and see how things change. I measured my home on Google Earth and found that we are only 900 ft from the mine with closest developable lot only 200-300 ft away. If you assume the ground particle velocity is the same at the closest lot as it is at my home (.055 in/sec stated by Lakeview), you see that the predicted structure velocity approaches 2 in/sec when the ground velocity is only .055 in/sec. The actual peak particle velocity is probably much higher at that lot. This illustrates that just because you are below the 2in/sec at the ground you may be much higher at structure and thus causing potential catastrophic damage. A structure like Bella Vida (tall and located close to the mine is very prone to damage)

I looked at the proximity of homes feeling the blast to the Thomas Mine and found that they are located between 900 to 1900 ft from the mine. It appears that homes located 2000+ ft away are not feeling the blast but anything less than that will most likely feel the blasts. I count 37 constructed homes, Bella Vida, 73 lots, 40 acres of property owned by the City of NSL and 2 acres owned by Davis School District all

within this zone.

I believe this presents a significant public safety issue and hope that the state can help reduce the risk. I appreciate your help and am happy to answer any questions.

Also, I was wondering if the state requires Lakeview to carry insurance and if so who is the insurer?

Thanks
John Hall
801-628-6320

Blast	Peak Vs In/Sec	Peak Vg In/Sec	d1	Tc lbs		Tm lbs	d2	Hs ft		Ds ft
Surface	1.848124	0.055	55.17241	8000		145	0.116667	35		300
	2.352157	0.07	55.17241	8000		145	0.116667	35		300
	3.024202	0.09	55.17241	8000		145	0.116667	35		300
	3.696247	0.11	55.17241	8000		145	0.116667	35		300
	4.368292	0.13	55.17241	8000		145	0.116667	35		300
	5.040337	0.15	55.17241	8000		145	0.116667	35		300
	5.712382	0.17	55.17241	8000		145	0.116667	35		300
	6.384427	0.19	55.17241	8000		145	0.116667	35		300
	7.056472	0.21	55.17241	8000		145	0.116667	35		300
	7.728517	0.23	55.17241	8000		145	0.116667	35		300
	8.400562	0.25	55.17241	8000		145	0.116667	35		300
	9.072607	0.27	55.17241	8000		145	0.116667	35		300
	9.744651	0.29	55.17241	8000		145	0.116667	35		300
	10.4167	0.31	55.17241	8000		145	0.116667	35		300
	11.08874	0.33	55.17241	8000		145	0.116667	35		300
	11.76079	0.35	55.17241	8000		145	0.116667	35		300
	12.43283	0.37	55.17241	8000		145	0.116667	35		300
	13.10488	0.39	55.17241	8000		145	0.116667	35		300
	13.77692	0.41	55.17241	8000		145	0.116667	35		300
	14.44897	0.43	55.17241	8000		145	0.116667	35		300
	15.12101	0.45	55.17241	8000		145	0.116667	35		300
	15.79306	0.47	55.17241	8000		145	0.116667	35		300
	16.4651	0.49	55.17241	8000		145	0.116667	35		300
	17.13715	0.51	55.17241	8000		145	0.116667	35		300
	17.80919	0.53	55.17241	8000		145	0.116667	35		300
	18.48124	0.55	55.17241	8000		145	0.116667	35		300
	19.15328	0.57	55.17241	8000		145	0.116667	35		300
	19.82533	0.59	55.17241	8000		145	0.116667	35		300
	20.49737	0.61	55.17241	8000		145	0.116667	35		300
Ground	0.898037	0.5	32.41379	4700		145	0.035714	50		1400

Vs	Peak Particle velocity structure (mm/s)
Vg	Peak Particle Velocity Ground near foundation (mm/s)
d1	Tc/Tm
d2	Hs/Ds
Tc	Total charge fired in the Ground (Kg)
Tm	Maxium charge per delay (Kg)
Hs	Height of the sensor on the structure from foundation (m)
Ds	Distance of the structure from the blasting source (m)

$Vs = 1.312 \times Vg \times \exp\{0.0215 \times d1 + 17.63 \times d2\}$ Equation for surface blasting

$Vs = 0.646 \times Vg \times \exp\{0.0279 \times d1 + 3.31 \times d2\}$ Equation for deep ground blasting

From Explosive and Blasting Technique By Rodger Holmberg Pg 72
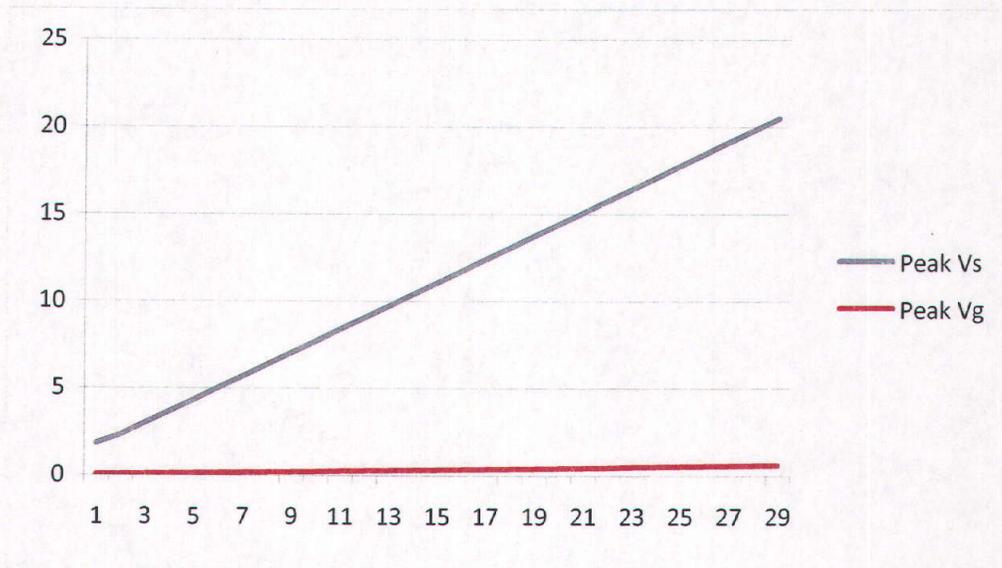
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ook_result&ct=result&resnum=3&ved=0CCEQ6AEwAg#v=onepage&q=blasting%20near%20fault%20lines&f=false